

**Mississippi Transitional Refresher Course
Pathophysiology
Course Outline**

Minimum course length 12 hours

1. Overview of Human System

1. Cell Structure

1. Plasma membrane
2. Endoplasmic
3. Ribosome
4. Mitochondria
5. Lysosomes
6. Golgi Apparatus
7. Centrioles
8. Cilia
9. Flagella
10. Nucleus
11. Nucleoli
12. Major Classes of Cells
13. Chief Cellular Functions
14. Cell Reproduction
15. Anaerobic Metabolism
16. Aerobic Metabolism

2. Tissue

1. Epithelial Tissue
2. Connective Tissue
3. Muscle Tissue
4. Nervous Tissue

3. Organ Systems Review

1. Integumentary System
2. Skeletal
3. Muscular
4. Nervous
5. Endocrine
6. Circulatory
7. Lymphatic
8. Respiratory

9. Digestive
10. Urinary
11. Reproductive
12. Special Senses

2. General Principles of Pathophysiology

1. Characteristics of Life
2. Needs of Living Organism
3. Basic Cellular Environment
 1. Intracellular and Extracellular Fluid
 2. Aging and the Distribution of Body Fluids
 3. What Movement Between ICF and ECF
 1. Osmosis
 2. Diffusion
 3. Mediated Transport Mechanisms
 4. Water Movement between Compartment
 5. Alteration in Water Movement
 6. Water balance
 7. Electrolytes
 8. Acid-Base Balance
 1. Buffer systems
 2. Derangements
4. Alteration in Cells and Tissues
 1. Cellular Adaptation
 2. Cellular Injury
 3. Manifestations of Cellular Injury
5. Genetics and Familial Diseases
 1. Factors Causing Diseases

1. Genetics
 2. Environmental
 3. Age and Gender
 2. Analyzing Disease Risk
 1. Disease Rates
 2. Risk Factor Analysis
 3. Combined Effects and Interaction Among Risk Factors
 4. Common Familial Diseases and Associated Risk Factors
 6. Hypoperfusion
 1. Pathogenesis
 2. Types of Shock
 3. Cellular Metabolism
3. The Body's Defenses Against Diseases and Injury
 1. Self-defense Mechanisms
 1. Infectious Agents
 1. Bacteria
 2. Viruses
 3. Other infectants
 2. Three Lines of Defense
 2. The Immune Response
 1. How the Immune Response works
 2. Characteristics of the immune response and immunity
 1. Natural Vs Acquired Immunity
 2. Primary Vs Secondary
 3. Humoral Vs Cell Mediated Immunity
 3. Induction of the Immune Response
 1. Antigens and Immunogens
 2. Histocompatibility Locus Antigens
 3. Blood Group Antigens

4. Humoral Immune Response
 1. B Lymphocytes
 2. Immunoglobulins
 3. The Secretory Immune Systems
5. Cell-Mediated Immune Response
6. Immune Response
 1. Cytokines
 2. Antigen Processing
 3. Antigen Presentation
 4. Antigen Recognition
 5. T and B Cell Differentiation
 6. T and B Cell Development
7. Fetal and Neonatal Immune Function
8. Aging and Immune Function
3. Inflammation
 1. Inflammation Contrasted to the Immune response
 2. How Inflammation Works
 3. Acute Inflammatory Response
 4. Mast Cells
 5. Plasma Protein Systems
 1. The complement Systems
 2. The coagulation Systems
 3. The Kinin Systems
 4. Control and Interactions of Plasma Protein Systems
 6. Cellular Components of Inflammation
 7. Cellular Products
 8. Systemic Responses of Acute Inflammation
 9. Chronic Inflammation

10. Local Inflammatory Responses
11. Resolution and Repair
12. Age and the Mechanisms of Self Defense
4. Variances in Immunity and Inflammation
 1. Hypersensitivity
 1. Mechanisms of Hypersensitivity
 2. Targets of Hypersensitivity
 3. Autoimmune and Isoimmune diseases
 2. Deficiencies in Immunity and Inflammation
 1. Congenital Immune Deficiencies
 2. Acquired Immune Deficiencies
 3. Replacement Therapies for Immune Deficiencies
5. Stress and Disease
 1. Concepts of Stress
 1. General Adaptation Syndrome
 2. Psychological Mediators and Specificity
 3. Homeostasis as a Dynamic Steady State
 2. Stress Responses
 1. Neuroendocrine Regulator
 2. Role of the Immune System
 3. Stress, Coping, and Illness Interrelationships